CLAIMS

What is claimed is:

1. A method of producing an M-pole low pass filter configured to simultaneously filter first and second signal channels with a high degree of phase and gain match across a passband of the first and second signal channels, the method comprising:

providing a first M-pole filter channel for filtering the first signal channel, M being an integer multiple of 2 and having a value of at least 4, the first filter channel comprising a first plurality of 2-pole low pass active filter stages coupled in series to provide M-pole filtering;

providing a second M-pole filter channel for filtering the second signal channel, the second filter channel comprising a second plurality of 2-pole low pass active filter stages coupled in series to provide M-pole filtering, wherein one of the second plurality of 2-pole low pass filter stages includes two variable components; and

adjusting a bias of the two variable components of the second M-pole filter channel to variably control component values of the two variable components to match the gain and phase of the second filter channel to the gain and phase of the first filter channel across a desired passband.

2. The method of claim 1, wherein providing the second M-pole filter channel further comprises providing the second M-pole filter channel such that the two variable components include variable capacitors.

3. The method of claim 2, wherein adjusting a bias of the two variable components of the second M-pole filter channel to variably control the component values of the two variable components further includes generating a bias voltage to variably control capacitances of the two variable capacitors.

4. The method of claim 1, wherein providing the second M-pole filter channel further comprises providing the second M-pole filter channel such that the variable components include variable resistors.

5. The method of claim 1, wherein providing the first M-pole filter channel further comprises providing the first M-pole filter channel such that one of the first plurality of 2-pole low pass filter stages includes two variable components having a fixed bias such that component values of the two variable components are constant.

6. An M-pole low pass filter configured to simultaneously filter first and second signal channels with a high degree of phase and gain match across a passband of the first and second signal channels, the low pass filter comprising:

a first M-pole filter channel for filtering the first signal channel, M being an integer multiple of 2 and having a value of at least 4, the first filter channel comprising a first plurality of 2-pole low pass active filter stages coupled in series to provide M-pole filtering;

a second M-pole filter channel for filtering the second signal channel, the second filter channel comprising a second plurality of 2-pole low pass active filter stages coupled in series to provide M-pole filtering, wherein one of the second plurality of 2-pole low pass active filter stages includes two variable components having biases which are adjusted to match the phase and gain of the second filter channel to the phase and gain of the first filter channel over a desired passband.

7. The M-pole low pass filter of claim 6, wherein each of the second plurality of 2-pole low pass active filter stages is comprised of components having values which are, within a predetermined tolerance range, equal to values of components of a corresponding one of the first plurality of 2-pole low pass active filter stages, such that the first and second filter channels are substantially identical with the exception of the component values of the two variable components which are adjusted to compensate for within-tolerance variations between components of the first filter channel and components of the second filter channel.

8. The M-pole low pass filter of claim 6, wherein the two variable components include capacitors having variable capacitances.

9. The M-pole low pass filter of claim 6, wherein the two variable components include resistors having variable resistances.

10. The M-pole low pass filter of claim 6, wherein one of the first plurality of 2-pole low pass active filter stages also includes two variable components, having fixed biases such that component values of the two variable components are constant.

11. A direct conversion receiver comprising:

radio frequency (RF) circuitry configured to generate a first signal;

quadrature mix circuitry coupled to the RF circuitry and configured to separate the first signal into separate I and Q quadrature signals; and

low pass filter circuitry comprising:

a first filter channel coupled to the quadrature mix circuitry and configured to filter the I signal, the first filter channel comprising a first plurality of 2-pole low pass active filter stages coupled in series to provide M-pole filtering;

a second filter channel coupled to the quadrature mix circuitry and configured to filter the Q signal, the second filter channel comprising a second plurality of 2-pole low pass active filter stages coupled in series to provide M-pole filtering, wherein one of the second plurality of 2-pole low pass active filter stages includes two variable components having biases which are adjusted to match the phase and gain of the second filter channel to the phase and gain of the first filter channel over a desired passband.

12. The direct conversion receiver of claim 11, wherein M is an integer multiple of 2 and has a value of at least 4.